SECTION 8.13

Water Resources

8.13 Water Resources

8.13.1 Introduction

This section evaluates the effect of the Modesto Irrigation District (MID) Electric Generation Station (MEGS) Project (Project) on water resources in the Project area. Potential impact to water resources are evaluated specifically with respect to significance thresholds, established in the California Environmental Quality Act (CEQA) Checklist (Section 8.13.4.1)

8.13.2 Laws, Ordinances, Regulations and Standards

Federal, state, county, and local laws, ordinances, regulations, and standards (LORS) applicable to water resources are discussed in this section and summarized in Table 8.13-1. Compliance with these LORS is discussed in Section 8.13.2.4.

8.13.2.1 Federal

The Clean Water Act (CWA) authorizes the U.S. Environmental Protection Agency (USEPA) to regulate discharges of wastewater and stormwater into surface waters by issuing National Pollutant Discharge Elimination System (NPDES) permits setting effluent standards. These permits are implemented at the state level by the Regional Water Quality Control Boards (RWQCB), but the USEPA may retain jurisdiction at its discretion. The CWA applies to MEGS for stormwater discharges and soil erosion control during construction and subsequent plant operation. Site-specific erosion control plans will need to be prepared and implemented for the construction of each Project element (e.g., at the Project site and Project linears) that physically disrupts or displaces surface soil.

8.13.2.2 State

State LORS applicable to this Project include CEQA and stormwater permits.

California Environmental Quality Act

The CEQA Checklist, provided in Section 8.13.6 as Table 8.13-5, defines significance for criteria water resources impacts.

Stormwater Permits

The Central Valley RWQCB (CVRWQCB) requires the filing of a Notice of Intent (NOI) prior to construction activities. Stormwater Pollution Prevention Plans (SWPPPs) must be prepared prior to filing the Construction NPDES permits. The State Water Resources Control Board (SWRCB) Water Quality Order No. 99-08-DWQ applies to construction activity NPDES stormwater permits for construction areas greater than 1 acre.

SWRCB Resolution No. 75-58

This resolution encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply. It is applied by the State Water Resources Control Board (SWRCB) on consideration of a new water right permit.

TABLE 8.13-1
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Conformance and Timing
Federal		
CWA	Regulates stormwater discharge and erosion control	NPDES permits required for construction and industrial stormwater would be obtained 60 days prior to discharge.
State		
Porter-Cologne Water Quality Control Act	Specifies the responsibilities of the state with respect to protection of surface waters	Delegates authority to implement surface water and stormwater permitting. No action required from applicant.
Local		
City of Ripon Ordinance 13.05	Non-potable Water Distribution System	It is the policy of the City to use non-potable water wherever possible to conserve potable water supplies. Project will use non-potable water to the extent feasible.
City of Ripon Ordinance Chapter 13.08	Sewage Connections and Disposal	MID will file an application for sewer service according to 13.08.060 prior to discharge.
City of Ripon Ordinance 13.04	Water Service System	Requires MID to apply for water service permit.
City of Ripon Ordinance	Storm water Management and Discharge Controls	Specifies requirements for stormwater plans, implementation of SWPPPs, best management practices (BMPs), Grading and Erosion Control
City of Ripon General Plan Policies		
Water Supply Policies		
Land Use and Growth Accommodations: Goal F: Groundwater Management to avoid overdraft and Maintain Drinking Water Quality	Policy F3. Manage land use and sewage disposal as required to maintain adequate groundwater quality.	Project would consult with City for building requirements, and implement applicable BMPs to control offsite migration of sediments and potential contaminants.
Goal G: Efficient Use of Water Resources Throughout the Community	Policy G3: Promote reclamation and reuse of municipal and industrial wastewaters for irrigation, recharge or other beneficial uses.	Project would use non-potable water
Community Health and Safety Goal C: Prevent Loss of Lives, injury and Property Damage due to flooding	Policy C2: Prohibit the construction of buildings within the 100-year flood plain	Project will be built outside the 100-year flood plain.
Open Space and Conservation: Goal D. To Reduce The Impact Of Urban Development On Surrounding Agricultural And Riparian Habitat As Much As Possible, Consistent With The Policies Of The General Plan.	Policy D4: The City shall require submittal of a Notice of Intent, and a copy of the Stormwater Pollution Prevention Plan filed with the Regional Water Quality Control Board prior to approval of improvement plans for any project greater than 1 acre.	Project will submit an NOI and SWPPP consistent with both RWQCB policies and the City's policies.

TABLE 8.13-1
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Conformance and Timing
	Policy D6: The City shall review design and operation parameters for stormwater detention faculties and make feasible adjustments to these plants which would promote recharge of stormwater detention facilities in areas of maximum infiltration capacity; increasing detention time where necessary storage capacity is not compromised, and adjustment of area/depth ratios to maximize infiltration. Policy D7: The City shall review the siting and design of proposed terminal storm drainage and explore options for detention of runoff in highly permeable materials adjacent to the Stanislaus River. These options may be coordinated with potential retirement of the City's sewage treatment facility and future recreational development of this area.	

City of Ripon General Plan 2035, Adopted September 15, 1998.
City of Ripon Ordinances, Title 13. December 1994.

8.13.2.3 Local

Ordinances

City of Ripon Ordinances in Title 13 specify the requirements for water supply, non-potable water supply, and discharges to sewers. These requirements include applying for permits to provide these services.

General Plan Policies

Applicable LORS identified in the City of Ripon General Plan (1998) address water supply, wastewater discharges, and stormwater discharges. These policies are presented in Table 8.13-1.

8.13.2.4 LORS Compliance Strategy

MEGS will comply with all appropriate federal, state, and local LORS by acquiring the permits described in Section 8.13.9.

The City has assured MID that a water supply (both potable and non-potable) of sufficient quantity and quality is available to support this Project (see will-serve letter in Appendix 8.13A). The City has also assured MID that adequate wastewater capacity exists to accommodate both the quantity and quality of wastewater that would be generated (see Appendix 8.13A). Therefore, the Project will be consistent with local policies.

The stormwater permitting process, including the preparation of an SWPPP, would begin prior to any construction activities. The NOI and SWPPP would be filed prior to the start of construction activities. The general industrial stormwater NPDES permit must be filed prior to plant operations. A NOI must be filed 14 days prior to the beginning of industrial activity.

8.13.3 Hydrologic Setting

This section describes the water resources features in the immediate area of the MEGS Project site. The discussion of hydrologic setting relates to the area approximately bounded by the City of Ripon to the north, the Tuolumne River to the south, the Sierra Nevada foothills to the east and San Joaquin River to the west. (All figures are located at the end of this section).

8.13.3.1 Regional Climate and Precipitation

The climate in the Ripon area is characterized as Mediterranean, with mild winters and dry summers. Most precipitation falls as rain between November and March. Total annual rainfall is approximately 12 inches. Monthly average temperature and rainfall for Modesto (approximately 4 miles southeast of Project) is shown by month in Table 8.13-2.

TABLE 8.13-2
Average Monthly Temperature and Rainfall at Modesto

	Total	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Avg temp (°F)	62.43	46.41	51.3	55.5	61.00	67.2	73.74	78.63	77.2	73.0	64.7	54.2	46.83
Avg rain (inches)	11.64	0.58	1.33	1.90	2.28	1.89	1.84	0.98	0.48	0.11	0.02	0.03	0.19
Maximum	26.61	2.43	6.03	6.34	7.27	5.86	6.49	4.89	2.24	1.04	0.69	0.74	2.19
Minimum	2.26	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Count	118	118	118	118	118	118	118	118	118	118	118	117	118
Standard deviation	4.32	0.61	1.34	1.42	1.53	1.57	1.47	0.96	0.66	0.24	0.09	0.12	0.43

Source: Data from DWR # B00 5738 00, compiled from 1871-2000.

8.13.3.2 Regional Water Supply and Use

Both groundwater and surface water supplies are available, developed, and utilized by and for municipal and agricultural uses. Local water users include water districts, private utilities, and private individual users (primarily groundwater).

Groundwater

Ripon gets its water supply from the underlying groundwater. As of 1998, there were 6 active wells with a total capacity of 5,750 gallons per minute (gpm) providing the potable water supply, a 550,000 gallon storage tank, and 2 booster pumps to maintain system pressure (City of Ripon, 1998).

The East San Joaquin Groundwater Basin (Figure 8.13-1) underlies Ripon, bordered on the south side of the Stanislaus River by the Modesto Basin (San Joaquin, 2001). In San Joaquin County, groundwater has been pumped for agricultural uses to an extent that groundwater levels in certain areas are dropping at an unsustainable rate. A large cone of depression occurs in central Modesto, approximately 8.5 miles to the southeast and another occurs west of Stockton, 17 miles to the north. The cone east of Stockton, at –60 feet deep, is a matter of concern to the county, and steps are being taken to reduce pumping from this area.

Depth to groundwater under the Project site ranges from 20 to 40 feet, and flows generally southwesterly from the mountains toward the valley. Local groundwater is essentially

unaffected by either of the cones of depression near Stockton or Modesto. Local ground water levels fluctuate seasonally with precipitation, runoff, and groundwater pumping.

There are water budget models for groundwater in both San Joaquin County (to the north) and Stanislaus County (to the south) of the Project. However, Ripon's current and projected water demands are dwarfed by the demands of faster growing municipal centers such as Tracy, Stockton, Modesto, Manteca, and Lodi. Therefore, the models focus primarily on the sites of highest demand and neither current nor future projections anticipate significant groundwater depressions near Ripon.

City of Ripon Water Potable Water Supply

The City of Ripon provides potable water to all residents and businesses within the City. Several industries and schools have wells of their own for irrigation and industrial uses. As of 1998, the City had 7 wells with a capacity of 5,750 gpm, sufficient for 4,500 connections. At that time, there were only 2,800 connections. The capacity was projected to increase to 9,500 gpm to serve the projected population of 15,000 in 2010. The City of Ripon has stated that it has no limitations on serving the domestic supply needed by the MEGS Project.

Most residential connections are unmetered, though industrial and commercial connections are metered.

City of Ripon Non-Potable Water Supply

The City of Ripon has developed a non-potable water system for industrial process water needs. The City of Ripon's non-potable water system uses municipal water wells that no longer meet drinking water standards. More detail of the non-potable supply is provided below in Section 8.13.4.1 and Table 8.14-4.

Flooding Potential

As shown on Figure 8.13-2, neither the Project nor Project linears are within a potential flood zone as mapped by the Federal Emergency Management Agency (FEMA). The nearest flood hazard zone is along the Stanislaus River, approximately 1,000 feet southeast of the Project. The flood zone in this area is bounded by the setback levee along the Stanislaus River.

MEGS proposes to discharge site stormwater to the City of Ripon stormwater sewer. The City is currently constructing a stormwater discharge pipeline, as well as sewer discharge, potable water, and non-potable pipelines as part of an infrastructure improvement project for the area under the new extension to South Stockton Avenue, east of the project site. The stormwater drain for this area will empty into the industrial sewage lines (City of Ripon, 1998). Based on historical experience, the system is considered adequate for even severe storms (Camp, Dresser & McKee, 1998).

The Project is outside the existing floodplain, and therefore will not be affected by potential flooding. The Project would convert a relatively small area to impermeable surface and therefore cause no additional flooding to areas that are not presently at risk.

8.13.4 Project Water Source and Quality

8.13.4.1 Project Water Sources

The Project will have water use demands for cooling, process water, and sanitary use. All cooling and process water will be provided by the City's non-potable water system. The connection for non-potable water will be to a line constructed by the City of Ripon under Stockton Avenue, directly east of the Project.

Potable water for sinks, showers and sanitary uses would be provided from the potable water main under Stockton Avenue. Estimated potable water use is approximately 1,000 gallons per month, or 0.025 gpm.

Process and cooling wastewater from the Project is proposed to be discharged back to the City's treatment and disposal system, after pre-treatment at the MEGS facility using a lime clarifier pre-treatment system. Sanitary wastewater will be discharged to the City's sanitary disposal. Stormwater will be discharged to the City's stormwater system, which in this part of town is the industrial treatment system. All connections will be to main lines under South Stockton Avenue, on the east perimeter of the Project, which are currently being constructed by the City as part of its overall infrastructure improvements to the area.

As presented in Section 2, MEGS is proposing to use non-potable groundwater from the City of Ripon for cooling and process makeup. The City's potable water supply will be used for domestic water needs.

The average and peak daily influent demand for cooling and process make-up is estimated at 122 and 244 gpm (Table 8.13-3). MID has consulted with the City of Ripon concerning this estimated non-potable water use and the City has agreed that the water is available and has agreed to serve it at the location and in the quantities requested.

Water Quality

The quality of the proposed non-potable water supply is good for industrial use, although not suitable for potable uses. Non-potable water derived from shallower groundwater wells contain small amounts of organic chemicals that do not meet the Primary Maximum Contaminant Level requirements for drinking water. Metals and salts are also slightly elevated, as is common for shallow groundwater in the Central Valley. These shallow wells have been replaced by deeper wells as a potable source. The City has implemented a progressive plan to use the non-potable wells to the extent feasible to conserve potable water. Non-potable water is used in Ripon for irrigation, washdown, industrial, and municipal uses, where water quality is sufficient. The constituents that most control power plant water use are silica (estimated at 29 mg/L) and total dissolved solids (TDS) in the circulating cooling tower. Silica in water is not very toxic, but concentrations of silica in excess of 150 mg/L in the cooling tower tends to precipitate and cause scaling problems if not treated with expensive chemicals.

In general, the cooling tower would be limited to approximately four cycles of concentration based on silica and TDS levels.

The City non-potable water supply was selected because it provides the best quality water, has the lowest cost, has fewest potential adverse economic and environmental impacts resulting from additional pipeline construction, and will assist the City in its goal to use non-potable water to replace potential potable water use wherever feasible (City of Ripon Municipal Code 13.05 et seq.). Other potential water sources listed in Water Policy 75-58 that were considered are as follows:

- Ocean water
- Naturally brackish water or irrigation return flow, or contaminated groundwater
- Inland wastewater of low total dissolved solids (TDS)

- Other inland waters

These alternatives are discussed in Section 9.0, Alternatives.

8.13.5 Project Wastewater Disposal

8.13.5.1 Description of Power Plant Processes that Generate Wastewater

In the process of producing demineralized water for combustion turbine generator (CTG) water injection for NOx control, the plant will process non-potable well water through a Reverse Osmosis (RO) system followed by an Electro-Deionization (EDI) system to produce demineralized water. The RO process equipment will have a continuous wastewater stream of approximately 58 gallons per minute (gpm), which is basically concentrated well water. The approximate concentration factor in the RO process wastewater stream is a factor of four. The demineralized water treatment plant equipment will operate whenever the power plant is in operation.

The demineralized water treatment plant will include a multi-media filter system to remove minor amounts of suspended solids contained in the well water to protect the RO system. The filters are anticipated to require backwashing once a week to clean the filter system. The filter backwash process uses a portion of onsite stored well water to flush the filters. The backwash volume is anticipated to total approximately 5,000 gallons per week, consisting of an intermittent flow rate of 250 gpm for duration of 20 minutes. This weekly 5,000-gallon waste stream will be slowly metered to the plant waste sump over an 8-hour period and discharged to the City sewer along with the aforementioned wastewater streams.

The CTGs will be provided with an inlet air cooling system to maintain power plant electrical output when the outdoor ambient temperature is high. The cooling system will consist of conventional electric water chillers along with associated packaged-type evaporative cooling towers used to reject heat from the water chiller system. The cooling tower equipment will have a continuous wastewater stream (blowdown) of approximately 21 gpm, which is essentially concentrated well water. There will also be minor amounts of chemical discharge in the cooling tower wastewater stream as the cooling tower circulating water system needs to be treated with various chemicals to control biological growth and equipment corrosion. The approximate concentration factor in the cooling tower wastewater stream is a factor of four. The cooling tower equipment will only be in operation when the ambient outdoor air temperature is above approximately 55 degrees F as no CTG intake air cooling is required when the outdoor ambient air temperature is low. Therefore, there are a significant amount of hours in the year (typically during the winter months) when there will be no blowdown from the cooling towers. Conversely, the cooling towers will typically be in full-load operation during the summer months when maximum cooling is required for the CTGs.

8.13.5.2 Plant Combined Wastewater Stream

The plant combined wastewater stream will be a mixture of the RO reject, filter backwash, and cooling tower blowdown wastewater streams. These streams will gravity flow to a single plant sump after pretreatment and will then be pumped to the City of Ripon wastewater system. The combined wastewater stream volume is expected to be a maximum of 79 gpm consisting of a weighted average of the RO reject and cooling tower blowdown streams, except during the weekly 8-hour filter backwash water pump-out cycle, when the

flow stream will increase to 90 gpm. However, the filter backwash stream will only add 0.6 percent to the power plant's wastewater flow. Table 8.13-3 presents a plant water balance.

Table 8.13-4 presents the water quality characteristics of the RO reject and cooling tower blowdown wastewater streams and the resulting quality of the combined stream that is proposed to be discharged to the City system. Since the filter backwash constitutes 0.6 percent of the flow and consists only of suspended solids removed from the City water supply wells, its impact on the power plant's wastewater is expected to be insignificant.

Proposed Pretreatment of Power Plant Wastewater

The proposed wastewater pretreatment system for the power plant consists of a lime clarifier-type water softening system intended to reduce the total dissolved solids level in the wastewater stream. The lime softening process will reduce TDS primarily by precipitating calcium carbonate and magnesium hydroxide. The plant untreated wastewater stream is expected to have a TDS level of approximately 1520 mg/L. After softening, the wastewater sent to the City of Ripon will have a TDS of approximately 890 mg/L. A water quality analysis of the treated wastewater stream from the power plant is found in Table 8.13-4.

The sludge generated from the lime softening pretreatment system will be dewatered onsite using either a belt filter press or centrifuge. The dewatered lime sludge cake will be collected in truck trailer bins and transported offsite to an approved disposal facility. The filtrate/centrate will be conveyed back to the influent into the lime softening pretreatment process.

Domestic Sewage

MEGS would generally have 2 workers present at any one time, who would use showers, sinks, and sanitation services at the plant generating approximately 0.025 gpm.

Stormwater Disposal

Most of Ripon has separate storm drain systems depending on the location and uses of the area. The older industrial portion of Ripon (including the MEGS site) discharges stormwater to the industrial wastewater lines. Some is pumped to South San Joaquin Irrigation District lines. Most of the district stormwater is pumped to the Stanislaus River. Because most of the soils in the Ripon area are sandy loams, they provide good percolation with little erosion and sedimentation. Based on historical experience, the system is considered adequate for even severe storms (Camp, Dresser & McKee, 1998).

MEGS would develop an 8-acre site into an essentially impervious area, from which all stormwater would be discharged. MEGS would collect all stormwater onsite and discharge to a storm drain running under South Stockton Avenue, directly east of the Project boundaries. From this point, stormwater will be discharged to the City of Ripon industrial pond system. The City of Ripon states that wastewater capacity is adequate to receive stormwater from this site.

This alternative for disposal was selected as having the fewest adverse impacts compared to the following options:

a. Discharge to surface waters (would require additional NPDES permitting and potentially cause adverse effects to aquatic biota or downstream beneficial uses. There would also be potential impacts associated with pipeline and outfall construction).

b. Reverse osmosis and brine concentrator or crystallizer (generally economically infeasible for a small facility).

c. Dry cooling (determined previously by the CEC Staff to be much more costly and less efficient than wet cooling. Dry cooling would likely to be too expensive to be economically feasible for a relatively small facility).

These alternatives are discussed in Section 9.0, Alternatives.

8.13.5.3 Description of the City of Ripon's Wastewater System

The wastewater generated by the power plant is proposed to be discharged to the City of Ripon's domestic wastewater sewer collection system, which conveys wastewater to the City's Wastewater Treatment Plant (WWTP).

The City of Ripon currently treats domestic and industrial sewage separately. The wastewater treatment facility is located south of the City of Ripon and north of the Stanislaus River. The domestic wastewater influent flow averages 1 million gallons per day (mgd). This influent is first screened to remove large debris and then directed to four ponds to provide biological treatment. The pond treatment system mimics that of the Advanced Integrated Wastewater Pond System. The treatment ponds are sealed with a clay liner, have a depth of 12 to 13 feet, and a detention time of 50 days at the design flow rate. These ponds are facultative ponds that can be operated either in series or in parallel. A recirculation system provides mixing and enhances wastewater treatment. The ponds have a surface mechanical aeration system to provide oxygen and mixing and the lower section becomes anaerobic to help stabilize the sludge. The effluent from the treatment ponds is allowed to percolate into 45 acres of disposal ponds.

TABLE 8.13-3
Plant Water Balance, Maximum Summer Condition

Process Point	From	To	GPM
1	Ripon non-potable water supply	Simple cycle plant services	244
2	Ripon non-potable Water	Chiller/cooling tower makeup	85
3	Ripon non-potable Water	Demineralized water filter	159
4	Demineralized water plant	RO inlet	158
5	Demineralized water filter	Plant wastewater sump	1
6	RO Outlet	E-cell inlet	101
7	RO Skid	Plant wastewater sump	57
8	DI Water	CTG combined NOx and SPRINT injection	101
9	DI Water	CTG water injection	84
10	DI Water	CTG SPRINT injection	17
11	DI Water	Evaporated to atmosphere	101
12	Cooling tower	Evaporation	64
13	Cooling tower blowdown	Plant wastewater sump	21
14	Total wastewater	Plant wastewater sump	79
15	Domestic wastewater	Sinks, showers, toilets	0.025

TABLE 8.13-4
MID MEGS Project Process Wastewater Analysis Estimate
PB Power Rev F 3/3/02

Constituent	Abbr	Units	Well #11 Analysis	Cooling Tower Blowdown @ 4.0 Cycles of Conc.	Water Treat Plant RO Reject @ 4.0 Cycles of Conc.	Sewer Discharge Avg. Analysis with Cooling in Operation (Typical Winter Case)	Sewer Discharge Avg. Analysis w/ Cooling Tower Off Line in Operation (Typical Winter Case)	Estimated Clarifier Effluent After Lime Softening Process
Average flow rate to sewer		gpm		21	58	79	58	79
Total hardness as CaCO3		mg/L	170	680	680	680	680	
Calcium	Ca	mg/L	47	188	188	188	188	30
Magnesium	Mg	mg/L	12	48	48	48	48	12
Sodium	Na	mg/L	60	240	240	240	240	240
Total alkalinity as CaCO3		mg/L	200	800	800	800	800	
Bicarbonate	HCO3	mg/L	200	800	800	800	800	31
Sulfate	SO4	mg/L	28	112	112	112	112	158
Chloride	Cl	mg/L	26	104	104	104	104	104
Nitrate as NO3	NO3	mg/L	66	264	264	264	264	264
pH			7.9	9.1	8.0	8.3	8.0	7.5
Specific conductance		umho/cm	560	2240	2240			
Total dissolved solids		mg/L	380	1520	1520	1520	1520	890
Silica as SiO3	SiO3	mg/L	29	116	116	116	116	102
Turbidity		NTU	0.2	0.8	0.8	0.8	0.8	10
Cooling tower residual chemicals:								
Hydroxyphosphonoacetic acid and etheraminephosphonate	PO4	mg/L		6		1.6	0	
Sodium tolytriazole	NaTTA	mg/L		2		0.5	0	
Carboxylic acid esters (polymer)	Polymer	mg/L		7		1.9	0	
Pyrenetetrasulfonic acid	PTSA	mg/L		1		0.3	0	

TABLE 8.13-4
MID MEGS Project Process Wastewater Analysis Estimate
PB Power Rev F 3/3/02

Constituent	Abbr	Units	Well #11 Analysis	Cooling Tower Blowdown @ 4.0 Cycles of Conc.	Water Treat Plant RO Reject @ 4.0 Cycles of Conc.	Sewer Discharge Avg. Analysis with Cooling in Operation (Typical Winter Case)	Sewer Discharge Avg. Analysis w/ Cooling Tower Off Line in Operation (Typical Winter Case)	Estimated Clarifier Effluent After Lime Softening Process
Bromine (biocide control):								
	HOBr	mg/L		0.10		0.03	0	
	OBr	mg/L		0.20		0.05	0	
Inorganics:								
Aluminum	Al	µg/L	ND					
Antimony		µg/L	ND					
Arsenic	As	µg/L	9	36	36	36	36	36
Barium	Ba	µg/L	87	348	348	348	348	348
Beryllium			ND					
Boron	B	µg/L	100	400	400	400	400	400
Cadmium	Cd	µg/L	ND					
Chromium, hexavalent	CrVI	µg/L	ND					
Copper	Cu	µg/L	ND					
Iron	Fe	µg/L	ND					
Lead	Pb	µg/L	ND					
Manganese	Mn	µg/L	ND					
Mercury	Hg	µg/L	ND					
Nickel	Ni	µg/L	ND					
Thallium	Tl	µg/L	ND					
Vanadium	V	µg/L	38	152	152	152	152	152
Zinc	Zn	µg/L	ND					
Organics:								
Butachlor		µg/L	0.7	2.8	2.8	2.8	2.8	2.8
Metolachlor		µg/L	0.7	2.8	2.8	2.8	2.8	2.8

8.13.6 Impacts

8.13.6.1 Environmental Checklist

Table 8.13-5 provides the CEQA Checklist questions that are used in this Small Power Plant Exemption (SPPE) Application to assess the significance of potential impacts and summarizes the possible impacts to water resources from the Project.

8.13.6.2 Discussion of Impacts

The Project impacts are evaluated with respect to the potential effect on surface and groundwater supplies, potential for erosion, water quality degradation, flooding, and consistency with existing LORS.

TABLE 8.13-5
MEGS CEQA Checklist

	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
Water Resources — Would the Project:				
a) Violate any water quality standards or waste discharge requirements?			X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X

TABLE 8.13-5
MEGS CEQA Checklist

	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X
k) Substantially deplete or degrade local or regional surface water supplies, particularly fresh water, or fail to implement reasonable alternatives for water conservation?				X

Project Effect on Surface or Groundwater Supplies

The Project will use non-potable water from shallow wells in and around Ripon for cooling water. The City currently encourages use of non-potable water to offset other water uses, and to conserve use of potable water from the deeper aquifer. Non-potable water is currently in excess supply as it is not suitable for regular drinking water use. Because the Project would use this degraded water, which is not subject to significant competitive uses, the Project would have a less-than-significant effect on groundwater and other users of this source. MEGS has consulted with the City of Ripon to determine that the required quantity and quality of water is available (Appendix 8.13-1).

Contamination of groundwater from site activities is not likely to occur as a result of Project construction. During construction, the Project would be subject to LORS requiring standards for isolating and controlling offsite runoff and contaminants that could enter groundwater. During construction, the Project would isolate all work areas using fiber, rolls, mats or similar devices to keep contaminated runoff from leaving the site. All stormwater on the site would be channeled into onsite drains that discharge to the Ripon stormwater system for appropriate treatment if necessary.

Contamination of groundwater from site activities is also not likely to occur as a result of Project operation. The impact of the proposed power plant wastewater stream on the City's system was determined based on a flow-weighted calculation. The flow-weighted calculation is based on a Project power plant wastewater flow rate of 79 gpm that would be the maximum flow discharged into the City sewer, which averages a flow of 1 mgd.

- **Total Dissolved Solids**: The addition of the power plant wastewater to the City's system is estimated to increase the TDS concentration in the City wastewater by approximately 2.5 percent, from an average of 717 mg/L over the past 4 years to an average of 735 mg/L.
- **Nitrates:** The addition of the power plant wastewater to the City's system is estimated to increase the nitrate concentration in the City's influent wastewater; however, nitrate is reduced in the City's WWTP via biological denitrification in the Advanced Integrated

Pond System. Therefore, no impact is anticipated for nitrate since this pollutant is treated in the City's system.

- **Chloride:** The addition of the power plant wastewater to the City's system is estimated to decrease the chloride concentration in the City wastewater by approximately 4.8 percent, from an average of 195 mg/L over the past 4 years to an average of 186 mg/L.
- **Sodium:** The addition of the power plant wastewater to the City's system is estimated to increase the sodium concentration in the City wastewater by approximately 5.8 percent, from an average of 154 mg/L over the past 4 years to an average of 163 mg/L.
- **Boron:** The addition of the power plant wastewater to the City's system is estimated to decrease the boron concentration in the City wastewater by approximately 2.1 percent, from an average of 0.48 mg/L over the past 4 years to an average of 0.47 mg/L.
- **Trace Metals:** Only arsenic (As) was detected in the proposed water supply to the power plant. Therefore, the only trace metal considered in MEGS analysis of the potential impact to groundwater was arsenic. The estimated impact would be an increase in arsenic concentration from an average of 8 µg/L to 11 µg/L. While this is an increase of 37.5 percent, the groundwater underlying the WWTP has arsenic concentrations ranging from non-detect (<3 µg/L) to 24 µg/L based on monitoring well data over the past 4 years. Therefore, no significant degradation of the groundwater is expected.

The wastewater constituents represent nominal increases that would not result in a measurable adverse impact on the City's wastewater system or significantly degrade receiving groundwater quality.

The Project will use no groundwater from the Project site, and would implement BMPs to control pollution of ground and surface water. Therefore, the Project will have a less than significant effect on groundwater supplies.

Project Effect on Wind or Water Erosion and Sedimentation

Stormwater runoff will be controlled during construction and plant operations through adherence to the conditions of a CVRWQCB Construction Activity Storm Water Permit. The permit requires a SWPPP that specifies measures, including BMPs, that will be used to control erosion and sedimentation. As noted in the City of Ripon General Plan, erosion and sedimentation hazards are generally low in the sandy loam soils of this relatively flat area, and BMPs should be effective in avoiding any significant hazards.

Project Effect on Water Quality Degradation

The Project will discharge effluent to the City of Ripon wastewater system for treatment and disposal, consistent with the City permits. MEGS has consulted with the City of Ripon to ensure that sufficient wastewater treatment capacity is available to treat and convey both the quantity and quality of this effluent.

The Project will comply with applicable stormwater requirements, such that no degradation of water quality as a result of stormwater runoff or erosion occurs.

Flooding Potential

The Project is not located in any identified flood zone. All stormwater runoff from the site would be disposed to the City of Ripon stormwater system, which is reported to have

adequate capacity for even severe storms. Therefore, the Project will not cause or contribute to flooding potential.

Project Consistency with Applicable Laws, Ordinances, Regulations and Standards
The Project will comply with the conditions of applicable permits as listed in Table 8.13-6. The Project would comply with the CEC staff policy, which encourages the use of alternative water supplies whenever possible. As noted, the project will use water from the City's non-potable supply. Therefore, the Project is consistent with this policy.

8.13.6.3 Cumulative Impacts

Cumulative impacts to water resources could occur through the wasteful use of surface water, poor quality of wastewater discharges, the excessive use of groundwater, uncontrolled discharge of stormwater runoff, or additional flooding hazards. None of these categories of water use is expected to result in significant cumulative impact to area water resources.

Water Supply
The City of Ripon indicates that there is sufficient quantity and quality of potable and non-potable water available to serve the proposed plant. Alternative water supplies were investigated and determined to be infeasible or to potentially cause greater environmental impacts. Water use for the plant will not cause cumulatively significant adverse effects.

Wastewater
The City of Ripon indicates that the wastewater treatment system has sufficient capacity to accommodate the expected quantity and quality of wastewater from the proposed facility. Wastewater discharges would not create impacts that are cumulatively significant.

Groundwater Use
The Project will not use potable groundwater. Non-potable water is generally separated from the potable supplies, and therefore will not cause significant cumulative impacts to potable groundwater supplies or uses.

Stormwater Runoff
The proposed Project would comply with the BMP conditions of a Construction Activity Stormwater permit and would have no offsite discharges from stormwater. Therefore, no significant cumulative stormwater impacts are expected.

8.13.7 Mitigation and Monitoring

The Project will mitigate for potential adverse impacts by complying with the requirements of applicable LORS. There would be no significant impacts to ground or surface water caused by the MEGS Project. Therefore, no mitigation other than compliance with permit conditions will be required

8.13.7.1 Proposed Monitoring Plans and Compliance Verification Procedures

As part of compliance with City wastewater rules, the City or its agent implements monthly monitoring for determination of waste analysis. The analysis is used to determine compliance as well as appropriate charges to the discharger. No additional monitoring of surface or groundwater would be required because no water quality impacts are expected to occur.

8.13.8 Agency Contacts

Agency contacts are provided in Table 8.13-6.

8.13.9 Permits Required

- The CVRWQCB is responsible for administering water quality permitting for the Project.

- CVRWQCB Construction Activity NPDES Stormwater Permit, General Permit, 1999.
- The City of Ripon will require an Industrial Wastewater Discharge Permit for discharge to the sewage system.

A tabular summary of required permits and involved agencies is provided in Table 8.13-6.

TABLE 8.13-6
Permitting Agencies for Water Resources Permits

Permit	Agency
Construction Activity NPDES Stormwater Permit	CVRWQCB Brett Stevens Water Quality Engineer (916) 255-3506
Industrial Wastewater Discharge Permit	City of Ripon Matt Machado City Engineer (209) 599-2108

8.13.10 References

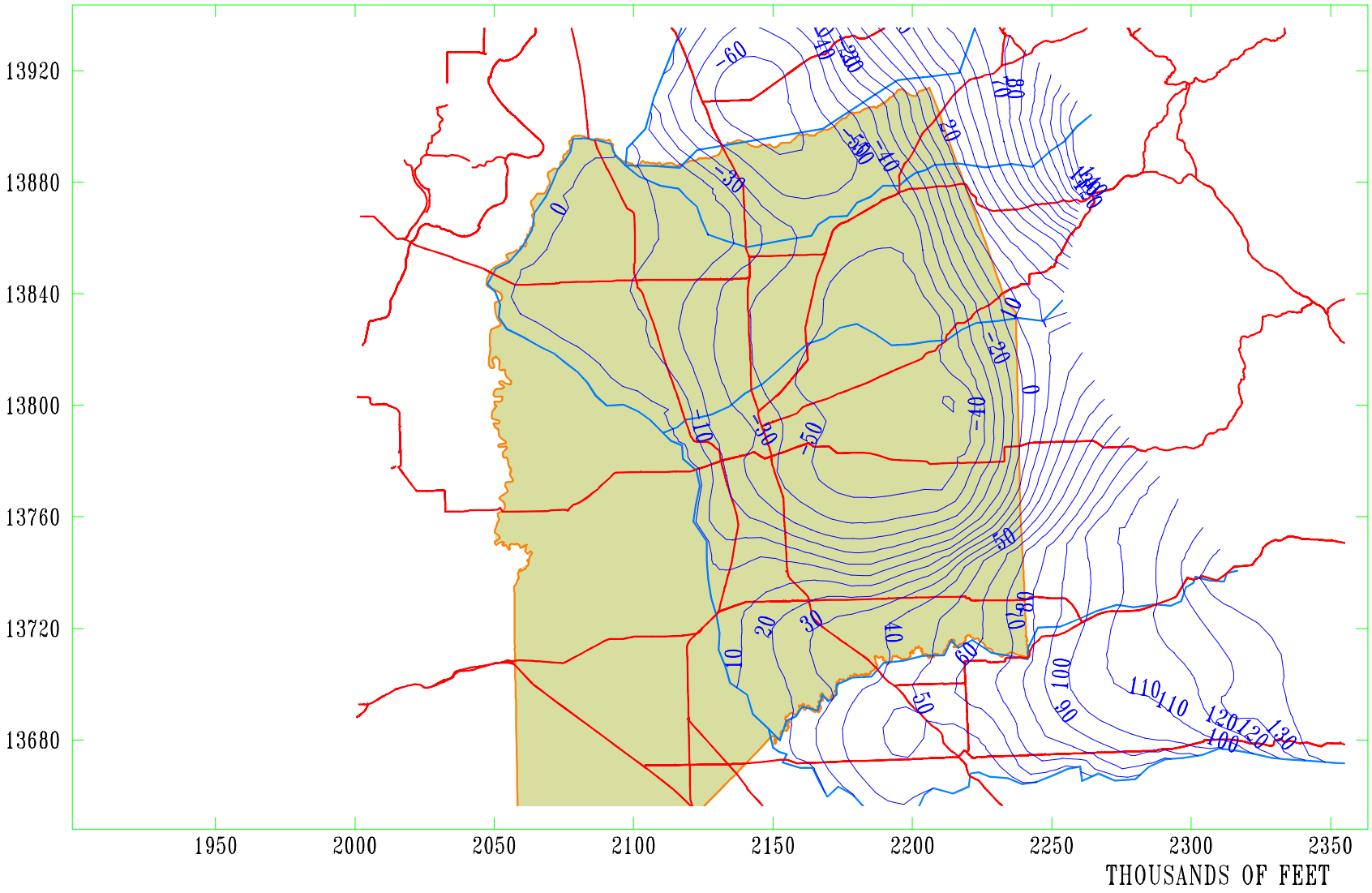
City of Ripon. 1998. General Plan and Environmental Impact Report for the Area General Plan. Certified September 15.

City of Ripon. 2000. Municipal Code. January.

Camp, Dresser & McKee. 2001. San Joaquin County Flood Control and Water Conservation District; Water Management Plan. October.

Hill, Steven. 2001. Generation Manager at MID. Personal communication. April 4.

Machado, Matt. 2003. City Engineer, City of Ripon. Personal communication. January 21.



consulting engineering construction operations CDM

Simulated Groundwater Table Elevation (ft, msl)
Baseline Conditions: Year 2000

San Joaquin County Water Management Plan

FIGURE 5-18

FIGURE 8.13-1
DEPTH TO GROUNDWATER IN PROJECT VICINITY
MID ELECTRIC GENERATION STATION

CH2MHILL

W022003005RDD_01 (2/18/03)

SITE LOCATION

LEGEND

ZONE

- A
- ANI
- X
- X500
- 3-MILE BUFFER

N

0 0.5 1 Miles

FIGURE 8.13-2
FLOOD MAP
MID ELECTRIC GENERATION STATION

CH2MHILL

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